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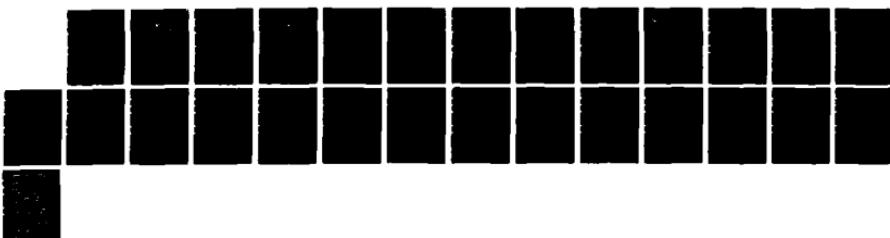
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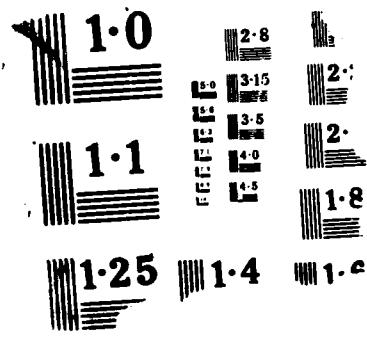
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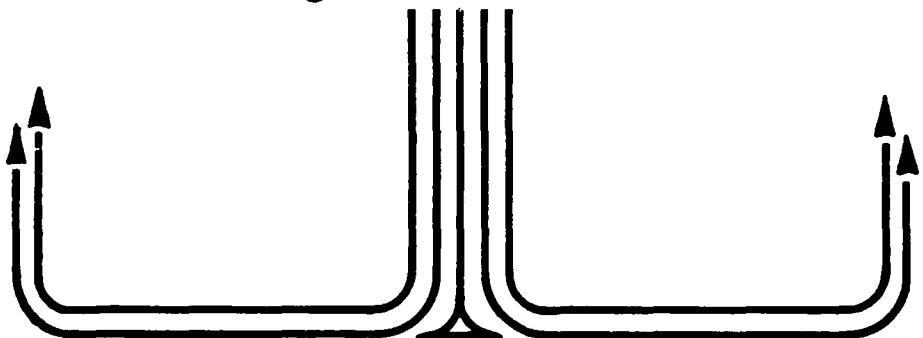
## STUDENT REPORT

AIR POWER: A SEARCH FOR A DOCTRINE

MAJOR ANDREW J. OGAN

88-2020

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**SPONSOR** CADRE/RID

Submitted to the faculty in partial fulfillment of  
requirements for graduation.

**AIR COMMAND AND STAFF COLLEGE**  
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## PREFACE

The study of air power is important to every Air Force officer, regardless of specialty. This effort was, perhaps, more basic than most. I attempted to deal with the basic questions of what is air power, and where does it fit into modern warfare? The results of that search are contained in this document. Subject to clearance, this manuscript will be submitted to the Airpower Journal for consideration.

I have received a great deal of help in the composition of this paper. Maj Jahnke has provided valuable assistance and critiques of the concepts contained herein. Likewise, Lt Col Bingham, CADRE/RID, helped me to try to focus my arguments on this rather broad subject.

I would be remiss if I did not recognize the substantial assistance and support I received from Mr Ted Kluz of the Air War College. For those who follow, I would recommend that you seek him out.



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## ABOUT THE AUTHOR

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Major Andrew J. Ogan has recently completed a tour as an Air Staff Action Officer assigned to the Supply Policy Management Division, HQ USAF/LEYS. In this capacity, Major Ogan worked on wholesale supply policy issues and contributed to the development of the Combat Support Doctrine. Previously, he served as a supply operations analyst at the Air Force Logistics Management Center. During this period, Major Ogan worked a variety of supply policy issues including the development and documentation of capability assessment models. He has served as Executive Officer, Defense Industrial Supply Center, Defense Logistics Agency, and as Chief of a Commodity Section in the Directorate of Supply Operations at that center. Previous Air Force supply experience includes assignments in the base-level supply system. Major Ogan has an MS degree in Logistics Management from the Air Force Institute of Technology and has been awarded the Certified Professional Logistician designation from the Society of Logistics Engineers. Previous articles by Major Ogan have been published in the Defense Management Journal, the Logistics Spectrum, and the Air Force Journal of Logistics.

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# EXECUTIVE SUMMARY



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**REPORT NUMBER** 88-2020

**AUTHOR(S)** MAJOR ANDREW J. OGAN, USAF

**TITLE** AIR POWER: A SEARCH FOR A DOCTRINE

**I. Purpose:** To develop a doctrinal framework for the evolution and integration of all air power resources.

**II. Problem:** There exists no overall air power doctrine. Each Service possesses an independent "air force," a condition that fragments the development and application of air power. The resources are not effectively integrated. The future developments of technology may not be adequately accommodated under existing doctrinal beliefs.

**III. Concept Development:** A basic air power doctrine should help accommodate new technologies and construct appropriate air power missions. This article meets these objectives by establishing a doctrinal framework within which subordinate doctrines and air power missions can be constructed. The basic approach here has been to identify the characteristics of air power and the basic military capabilities associated with its application. The two key characteristics are the use of the environment of aerospace and the intelligence that must be resident within the aerospace system. This broad definition affords a wider view of possible air power tools. The military capabilities of projection, denial, and

## **CONTINUED**

oversight encompass the basic roles and missions of air power. The application of these concepts within modern warfare requires a recognition of the wartime environment. National policy and the nature or spectrum of the conflict dictate the manner in which missions and air power tools are developed and executed.

IV. CONCLUSIONS: Doctrine helps air power build for the future. The roles and capabilities of air power will continue to evolve. The doctrinal foundations must be broad enough to allow for this maturation process. The concepts contained here establish the characteristics and the military capabilities of air power--and provide the basis for future growth.

## Chapter One

### INTRODUCTION

#### THE PROBLEM

Air power is the successful employment of aerospace resources to defend the nation and to support national foreign policy objectives. In a military sense, air power is the application of aerospace tools to achieve victory--as defined by the national leadership. To be decisive, air power may act independently or in concert with land and sea forces (2:70).

While such statements may be accepted today, the actual concept is confused. Just what is air power, and more importantly, how does it fit within the parameters of modern warfare? The questions are basic but the answers are not readily apparent. The fact is that air power has been fragmented. There exists no comprehensive doctrine to pull together the separate entities of air power--to provide definition to the medium of aerospace. The United States Air Force today exercises doctrinal and operational oversight over only a small portion of total air power resources. The Army, Navy, and Marine Corps all maintain "air forces" that are separate and distinct from the United States Air Force.

Doctrinally and operationally, each Service has developed facets of the air power medium. Like the blind men and the elephant, each Service "touches" only a portion of the air power spectrum. The fragmentation of air power among the Services is further aggravated by the lessons of history. The history of air power has been blurred by its very proponents. The political objective of forming a separate air service has colored our view of air power (4:2).

Missing from the discussion of air power is a structure for doctrinal development and innovation. Rivalries and artificial boundaries must be put aside in order to define and to develop this medium of air power. This paper will assume a dispassionate view of air power and suggest a

possible doctrinal framework that may aid the future development of this medium of warfare.

#### ORGANIZATIONAL DESIGN

To do so, the remaining five chapters of this paper will develop two major themes: the conceptual framework for air power, and the translation of that framework into actual applications. These two themes collectively determine the employment of air power.

The conceptual framework will develop air power as a medium of warfare. Initially, the medium will be defined by examining the unique characteristics of air power. This delineation will serve as a basis for evaluating the technology useful and pertinent to and the instruments of air power. Once the medium has been defined, the military capabilities relevant to air power--projection, denial, and oversight--will be developed.

The impact of air power on warfare is further complicated by the environment within which it must operate. The description of the impacts of conflict and national policy on air power employment will begin the translation of the concept into its applications. The discussion of operating environments will establish the context for the future employment of air power.

The final chapters will build on the concept and the environment to identify the way in which missions can and should be developed. The concluding chapter will highlight some issues key to the future which can and should be addressed by the air power theorists using the constructs proposed here.

## Chapter Two

### CHARACTERISTICS OF THE AEROSPACE MEDIUM

#### INTRODUCTION

Any discussion of air power or the aerospace medium should begin with a definition of what it is. The definition of the medium affects the tools available and the usefulness or applicability of future technological developments. Today, however, there exists no concise, generally accepted definition of air power. Even the mix of tools that make up air power differ from Service to Service and even from country to country.

The definitional problem really comes down to the best way to bound the medium--to delineate those aerospace weapon systems from the land and sea systems. There are just two characteristics that are needed to define the aerospace medium: environment and intelligence. The description of each and the way in which they interact will illustrate the impact of characteristics on future air power employment concepts.

#### ENVIRONMENT

The first characteristic is that the aerospace environment is physically used to perform the military mission (2:3-5). An aircraft must fly through the air to put bombs on target. A satellite must use the aerospace medium to perform its missions. In this regard, the air power tool uses the medium to accomplish military objectives. This environmental characteristic establishes obvious air power tools such as fixed-wing aircraft and helicopters while excluding such military instruments as tanks and ships.

This characteristic appears to be intuitively obvious. Air Force documents that discuss the performance characteristics of speed and range rely on all actions taking place within the aerospace environment (9:2-2). However,

this characteristic alone is not sufficient to distinguish aerospace instruments from sea and land forces. Bullets and shells, for example, use the aerospace medium but would not be considered as unique aerospace instruments. Another characteristic is needed to further delineate aerospace from the other mediums.

#### INTELLIGENCE

This second characteristic or criterion follows from the first. Specifically, once in the aerospace medium, there is the capability to make decisions or to exercise intelligence. This is a less obvious but essential characteristic of air power. The intelligence can be resident within the aerospace vehicle, within a second vehicle, or on the ground. Thus, under this characteristic, remotely-piloted vehicles, satellites, and fixed-wing aircraft would all be accepted aerospace vehicles.

The characteristic of intelligence is not a new and startling concept. Air Force documents that discuss the flexibility of air power rely on the ability to change targets or locations--to express intelligence within the weapon platform (9:2-2). As a further note, many of the operational capabilities attributed to aerospace operations such as mobility, responsiveness, survivability, and presence (9:2-3) have their basis in the characteristic of intelligence. Originally, the intelligence was resident in the airman operating the aircraft. Today, that system remains intact, supplemented by artificial intelligence and ground controlled systems.

#### APPLICATION OF THE CHARACTERISTICS

These two characteristics, taken together, provide a basis for development of future air power instruments. A sampling of air power tools that exhibit these characteristics include helicopters, missiles, remotely-piloted vehicles, satellites, and fixed-wing aircraft. While this is not an exhaustive list, it does provide a useful frame of reference. Each of the "air forces" in the U.S. military uses a collection of these instruments. None, however, has included all tools in the development of their respective doctrines or operational concepts.

To date, divisions for the Services made between air

power tools (such as distinctions between fixed-wing aircraft and helicopters) are artificial--and transitory (3:136). Because of the technological developments that are inherent in all military disciplines, clean lines of demarcation between various air power tools are not always possible or practical. The airlift resources of air power have been further augmented and enhanced by the entrance of the helicopter. In a short time, the helicopter has matured into a workhorse on the modern battlefield--assuring a degree of mobility that only air power can deliver (8:119-120). The vertical/short take-off and landing (V/STOL) technologies will further blur the distinctions among the tools of air power.

## Chapter Three

### AEROSPACE MILITARY CAPABILITIES

#### INTRODUCTION

The characteristics of environment and intelligence set air power apart from the land and sea forces. Once the distinction has been made, the role of air power can begin to be defined. As a basis of discussion, we will focus on the military capabilities of air power. Typically, air power enthusiasts have concentrated on the destructive potential of air power--strategic bombardment (3:78-79). However, the capabilities of air power must be viewed against the ways in which air power has been used, given the previous definition of air power.

Historically, air power has been employed to accomplish three "things:" projection, denial, and oversight. Rather than get into a definitional debate, I will refer to these "things" as military capabilities. These three capabilities form a powerful triad against which roles and missions can be developed. Each of these capabilities represents a valuable function of air power that must be recognized in the employment of air instruments.

#### PROJECTION

The great part of modern air power theory and doctrine has been directed toward the facet of projection. Projection in this context is the ability to place military force at a given location and time. The vagueness here is deliberate. There are a variety of methods to focus military power. The obvious Air Force method is through bombardment. A less obvious but equally important method is the projection of land forces through airlift. The mobility that the Army enjoys today is a result of the projection of force by air power tools (helicopters and fixed-wing aircraft) (8:120). Commonly accepted concepts such as close air support,

interdiction, and strategic bombardment also form a part of this facet of air power. The important aspect of this facet is the placement of military force--in whatever fashion--in a given amount and at a specified time and place.

#### DENIAL

The companion to projection must be denial. This concept refers to the ability to prevent or deny an adversary freedom of action. While projection was strictly offensive, denial involves a mixture of offensive and defensive actions. On the one hand, this capability tends to be defensive in nature by preventing enemy actions. The Battle of Britain is viewed by many as a classic example of such denial (4:237). On the other, however, offensive actions such as the commonly accepted concept of air superiority is a distinctly integral part of denial. And, portions of interdiction and close air support may also fall into this category. Finally, airlift can, through movement of forces and resources, deny freedom of action or territory to an adversary.

#### OVERSIGHT

Perhaps the most used but the least considered military capability of air power is oversight. Simply stated, oversight is the function of watching or guarding to assure proper direction and control. The reconnaissance and satellite efforts to observe foreign military developments and to protect the United States are significant and critical contributions of air power. Clearly, this capability considers the impact of visibility on the actions of hostile governments. The satellite observation that goes on worldwide is a key ingredient of the military power of the U.S. and a critical component of foreign policy (7:40). One of the crucial components of any reduction in arms agreement is the ability of the U.S. to exercise this military capability. The movement of the E-3A aircraft into a region, for instance, sends an assortment of political and military signals. Oversight may cause governments to behave differently--to change their military plans.

#### APPLICATION OF MILITARY CAPABILITIES

These capabilities work in concert to support specific air power missions. Missions are simply statements of military objectives that form the basis for force structures

(9:3-2). These objectives can be attained through the exercise of the capabilities. In short, any mission contains a mix of these capabilities. As such, these capabilities form a framework within which to build the mission statement and force structures.

Each mission contains a dominant capability with the other capabilities fulfilling supporting roles. Only through a recognition of all capabilities can the mission be completed. The mission of air interdiction, for example, contains the dominant capability of projection. However, denial is necessary to suppress enemy defenses--to allow freedom of movement--, and observation is needed to acquire the target information and to assess the success of the mission.

## Chapter Four

### APPLICATION ENVIRONMENT

#### INTRODUCTION

The characteristics and capabilities of air power are important only as they facilitate the contribution of the medium to the strength of the nation. Theory must, in the final analysis, be of some practical use. The environment within which the air power leadership must function forms the broad structure for the practical application of air power theory. This application environment, to the military leader, consists of two primary players: the spectrum of conflict and the national policy. It is within this environment that air power must be effective and responsive.

#### SPECTRUM OF CONFLICT

The nature and intensity of conflict varies substantially from event to event. While air power proponents have traditionally focused on the nuclear or the European conventional war roles, there are many other kinds of conflicts that require U.S. forces. In point of fact, there is a recognized spectrum of conflict (Figure 1) that categorizes these different forms of warfare. Conflicts can range from low intensity such as show-of-force operations and surgical strikes to high intensity such as general conventional or nuclear war (1:1-4).

The spectrum of conflict defines the operational environment for the military planner. Determinations relating to the nature of a conflict and the appropriate military options are the purest form of the military art. This purely military assessment of the appropriate strategies, tactics, and tools are performed against the backdrop of the conflict. The tempo and intensity of operations as well as required force strengths to carry out these operations are key factors defined by the nature of the conflict.

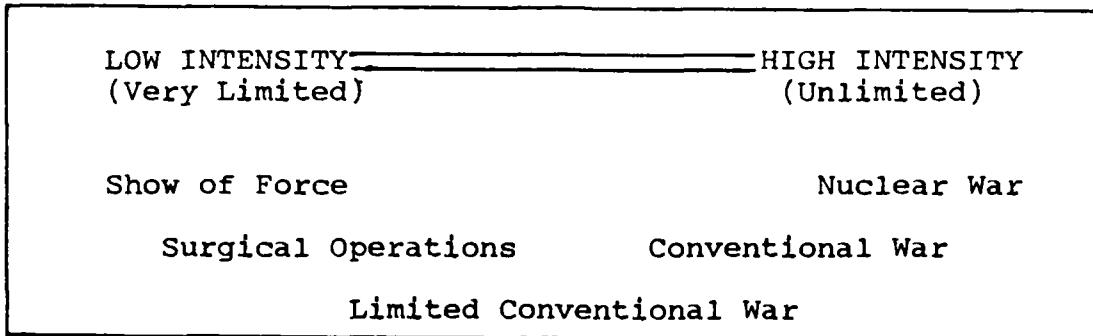


Figure 1. Spectrum of Conflict (1:3-5).

#### NATIONAL POLICY

Air power is effective--and for that matter needed--only to the extent that it supports and furthers any national policy. Implicit in that statement is the idea that the sea, air, and land mediums operate in concert with one another rather than in a dysfunctional manner. Military forces, in this context, are used to "influence" another country or group to act in a certain manner (6:190-191). While the spectrum of conflict is useful to develop military responses, it is the national policy that determines the level and scope of military involvement in any given situation.

To the military leader, national objectives describe the political framework within which military power will be used. National objectives define the terms of success or victory. These national objectives must be consistent. However, it is within the national policies that military objectives are derived. Key variables that are defined within the political environment include the level of force, duration of the conflict, degree of freedom for the military forces, and, possibly, the forces to be used (6:232).

#### AIR POWER AND THE ENVIRONMENT

The spectrum of conflict and the national policy both define the application environment for the air power planner. The spectrum of conflict is useful in identifying the military response most appropriate for a given conflict. National policy further refines the military role within the

conflict.

The characteristics and the capabilities of air power provide a framework to develop the aerospace options within this environment. The characteristics are important to identify the wide range of tools that are available to accomplish air power missions. The military capabilities provide a means to assess to structurally develop air power missions commensurate with the demands of the conflict and the nation.

## Chapter Five

### EMPLOYMENT OF AIR POWER

#### INTRODUCTION

Prior to Chapter Four, the discussion of air power has been theory. With the real world framework or application environment established, that actual employment of air power against that framework can be developed. The remainder of this chapter will elaborate on a concept for mission development, discuss this concept in greater detail through the use of one example, and summarize the key elements of this discussion.

#### MISSION DEVELOPMENT

The start of any mission development begins with a conflict. The spectrum of conflict is useful in determining the nature and possible resolution. The purely military options can be ascertained through this process. However, only after a national policy has been enunciated can the military planners begin to assign forces or to build a force structure to support that policy. Air theorists, working with the land and sea representatives, must develop the air power missions. Once the determination of conflict and policy has been developed, the air power planner can define missions and build forces to implement the policy.

The air power capabilities form a structure within which to develop the air power mission. Since one capability will inevitably dominate, the air power planner must determine the nature of the air power mission (projection, denial, or observation). This decision on the dominant capability describes key factors such as offensive versus defensive or active versus passive air power missions. While one capability may dominate, all three capabilities are essential to the development of air power missions. The projection, denial, and observation capabilities provide a structure to assure the integration of the lesser air power capabilities

with the dominant capability.

The characteristics of air power identify the population of air power tools or weapon systems that can implement that portion of the air power mission. These characteristics are helpful in determining the population of instruments available for use. Care must be taken to look at the capabilities of the tool rather than at its common use. The role of the bomber, for example, has evolved to include nuclear, conventional, tactical, and strategic missions (5:--). The air power planner can, from a list of candidate systems, use that mix of systems that best supports the mix of military capabilities sought--and thereby meets the mission needs.

#### MISSION DEVELOPMENT EXAMPLE

To put all of this into some perspective, let's assume a simplified case. The type of conflict under consideration here is solely nuclear war. In the pure military sense, there are a variety of ways to protect the nation against--and to possibly win--a nuclear war. Preemptive nuclear strikes, extensive defensive missile systems, and a number of other options are possible solutions. However, the national policy must also be reconciled. Assume for the moment that the national leadership has a stated policy of strategic nuclear deterrence. In simple language, the leadership wants to prevent an attack on this nation solely through a national ability to inflict a devastating nuclear attack on any nation that attacks this nation. How would this air power mission be developed?

To perform this mission of deterrence, the air power planner must rely on a blend of projection, denial, and oversight. The dominant capability would be offensive in nature--most probably the military capability of projection. The other two military capabilities would be directed in such ways that support and facilitate the projection capability. Projection is essential to actually carry out the attack against an aggressor. This is the "bottom line" to what the national leadership has demanded. Denial is added to possibly deny or deflect enemy attacks against the projection forces. Observation or oversight is necessary to allow for early detection of enemy attacks and to assist in the targeting of mobile enemy forces.

The air power planner can begin to build the needed force structure by taking account of the air power tools that

are available. The characteristics of air power serve a useful end here. The characteristics of environment and intelligence allow the air power planner ample tools to fulfill the national policy objective. The capability of projection could be achieved through the used of manned aircraft, satellite systems, and/or missiles. The forces to conduct denial could make use of the similar systems designed to obstruct or to deflect enemy forces. Finally, to perform the oversight function, satellite, remotely-piloted vehicle, and/or manned aircraft may be appropriate.

#### KEY ELEMENTS

There are four key elements that are central to this discussion. First, the national policy element in this problem would interact throughout the process. Some air power instruments may not be acceptable to the national leadership. Second, the military capabilities provide a structure for examination of any mission. The capabilities provide a mechanism to cover the key things that air power should be doing. Third, the characteristics assure that planning will include the total suite of air power instruments. Finally, the tactical side has not been included in this discussion. The methods to get through an opponent's defenses or the appropriateness of certain air power instruments are not in question here. Those decisions are left to the technical expertise of the airman.

## Chapter Six

### CONCLUSIONS

When the early proponents of air power were developing their theories, few aircraft even existed. Combat lessons were not available. The synthesis of their theories were based on what they thought air power could accomplish. Many of these theories (which formed the basis of our doctrines) were based on very specific views of future conflicts.

Over the past seventy years, the entire art of warfare has undergone massive changes. Air power has evolved into a fighting force in its own right. Those fragile biplanes have been replaced by jet aircraft, missiles, helicopters, and assorted variations. The technology explosion that brought forth these systems continues unabated. The air power forces of tomorrow may have as much in common with air forces today as these forces have with the biplane.

The role of air power will continue to evolve as it matures. The doctrinal foundations must be broad enough to allow for the maturation process. The spectrum of conflict and the national policy establish the context within which air power will be used. The characteristics and the military capabilities of air power provide a broad basis for future growth--and for the future of air power.

Thus, it falls to the air power practitioner to escape the artificial constraints of the past and to develop the air medium broadly on the basis of the doctrinal framework delineated here. Let's go back to those initial questions. What is air power? How does it fit into modern warfare? We can now have a means to get at the answers.

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